Rocky Flats Environmental Technology Site

Building 776/777 2nd Floor Area Final Survey Report

Survey Units:
776035

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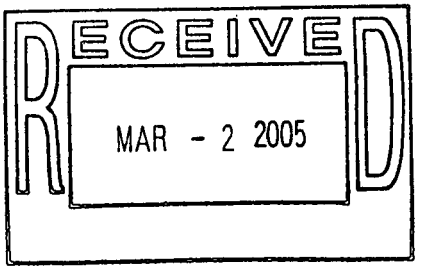
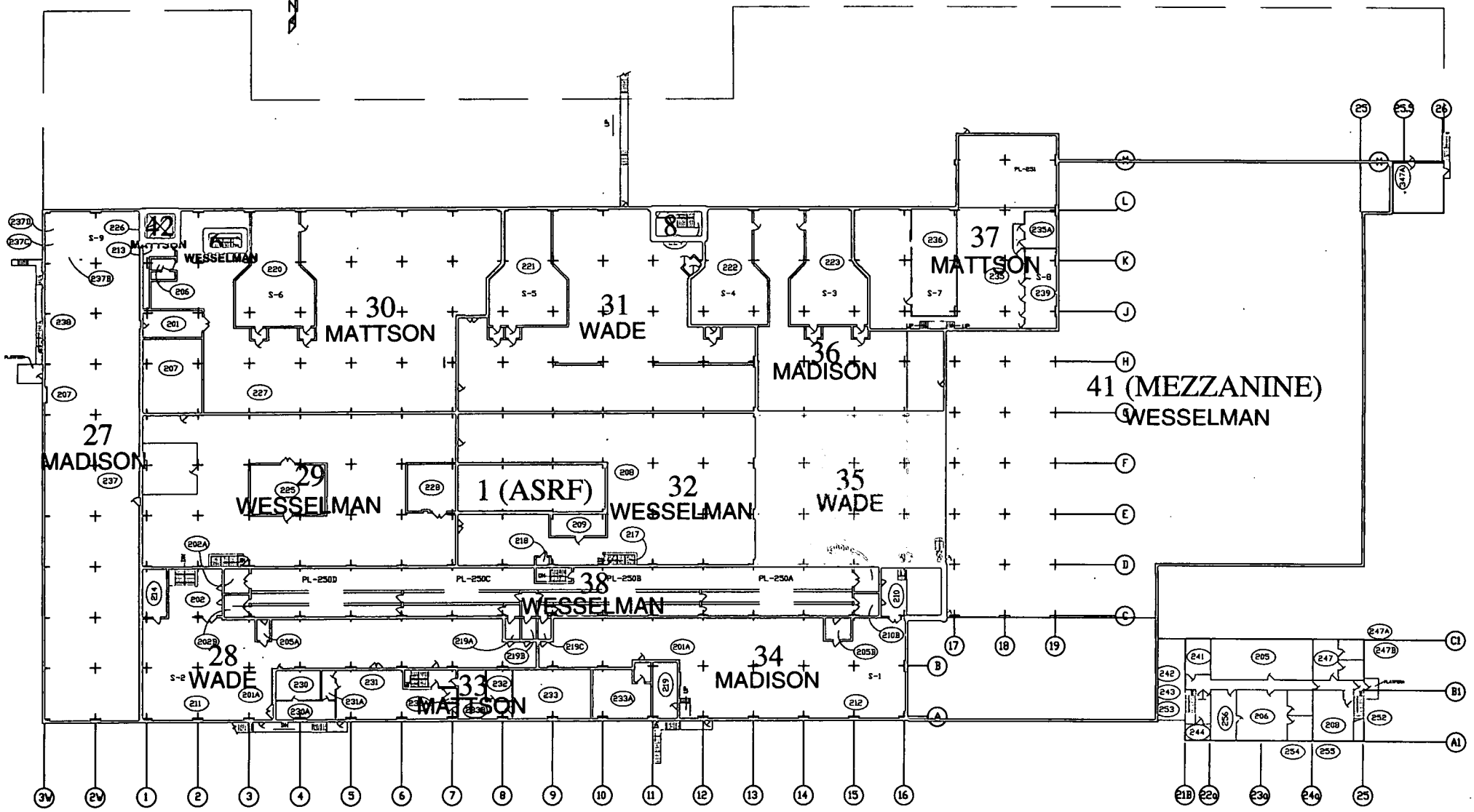
October 2004

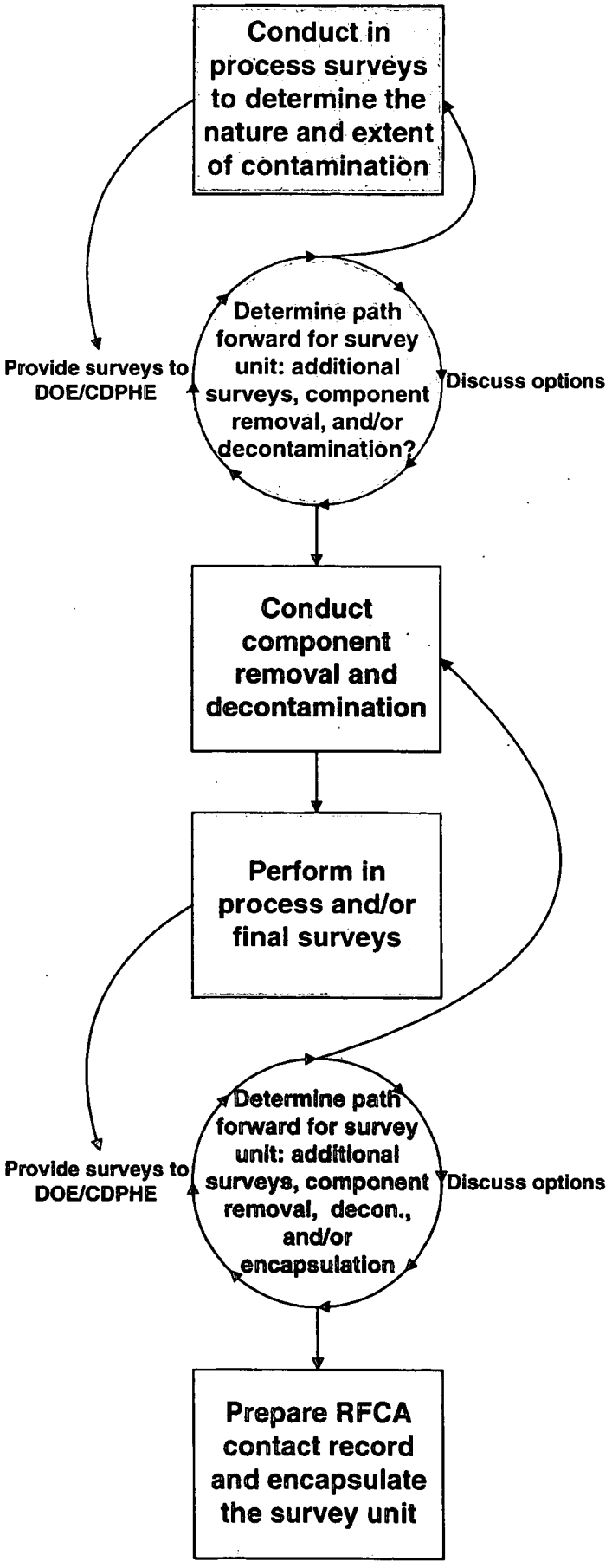


1/26

2

B776/777 INITIAL SURVEY UNITS
2nd FLOOR




Conduct in process surveys to determine the nature and extent of contamination
Determine path forward for survey unit: additional surveys, component removal, and/or decontamination?
Provide surveys to DOE/CDPHE
Discuss options
Conduct component removal and decontamination
Perform in process and/or final surveys
Determine path forward for survey unit: additional surveys, component removal, decon., and/or encapsulation
Provide surveys to DOE/CDPHE
Discuss options
Prepare RFCA contact record and encapsulate the survey unit

Survey Instructions
Building 776 2nd Floor
Survey Unit 776035

Purpose:

This instruction provides guidance for collecting gross gamma and removable contamination data to quantify the amount of residual contamination in Survey Unit 776035 prior to demolition. NaI measurements are performed in accordance with " INS-535-Ludlum2350-1 with Sodium Iodide Detector".

Equipment and materials:

1. A Ludlum 44-17 attached to a Ludlum 2350-1 set to collect five-minute counts that will be displayed on its LCD window.
2. A Bicron G-5 attached to a Ludlum 2350-1 set to collect five-minute counts that will be displayed on its LCD window.
3. One Electra with attached DP-6, calibrated and daily response checked.
4. Two probe holders, one for the G-5 and one for the 44-17 with tin shielding.
5. Calibrated and daily response checked SAC-4.
6. Measuring tape or laser range finder.

Note: The NE Electra with DP-6 probe and the Eberline SAC-4 shall be used in accordance with RSP- 7.01 and 7.02

Procedure:

1. Inspect instrument for obvious damage and ensure battery voltage is equal to or greater than 4.6 volts. If battery voltage is less than 4.6 volts change the batteries.
2. Complete daily performance checks for Sodium Iodide detectors to ensure the instrument is functioning properly by using Americium-241 source TS-912. Record results on Sodium Iodide Data Sheet.
3. For floor and concrete wall background measurements, perform a 300-second background count with a Bicron G-5 for floors or Ludlum 44-17 for walls at background location in room 201-A near column B-13 on the second floor. Record background counts next to "Bkg Floor" or "Bkg Concrete Wall"in background column of attached "Sodium Iodide Data Collection" sheets as needed.
4. For block wall background measurements, perform a 300-second background count with a Ludlum 44-17 at background location in room 201-A on outside of east wall of room 219 on the second floor. Record background counts next to "Bkg Block Wall" in background column of attached Sodium Iodide data collection sheets as needed.
5. For ceiling background measurements, perform a 300-second background count with a Ludlum 44-17 at background location in room 201-A near column B-13. Hold the probe waist high, pointed toward ceiling using a sheet metal plate in front of the detector (take background measurement in this configuration). Record background counts next to "Bkg Metal Ceiling" in background column of attached Sodium Iodide data collection sheets as needed.
6. Mark the sample locations on the surfaces to be measured. Take all measurements on contact with the marked surface using tin side shields on the Bicron G-5 and tin side and back shields on the Ludlum 44-17. All Sodium Iodide readings shall have 300 second count times.
7. Collect sodium Iodide, total surface activity and removable surface activity measurements at all locations marked on the attached map.
8. Record the NaI and NE Electra measurements on the attached sheet. Note any items or conditions that may have affected the measurement in the "remarks" section.
9. Count swipes for 60 seconds with a SAC-4, record result on attached sheet for removable contamination.

Survey Instructions
Building 776 2nd Floor
Survey Unit 776035

Table 776035-1: Survey Requirements				
Surface	**Type of Survey**	**Probe**	**Placement**	**Count Time**
Floor	Total Alpha Activity	Bicron G-5	On contact	300 seconds
All Surfaces	Total Alpha Activity	Electra with DP-6	On contact	60 seconds
Block walls	Total Alpha Activity	Bicron G-5 or Ludlum 44-17	On contact	300 seconds
All Surfaces	Removable Alpha	SAC-4	Swipe in placed in tray	60 seconds
Ceiling	Total Alpha Activity	Ludlum 44-17	On Contact	300 seconds
Block Walls	Background measurement	Bicron G-5 or Ludlum 44-17	On contact with wall in room 201-A near outside of east wall of room 219.	300 seconds
Floors and cement walls	Background measurement	Bicron G-5 or Ludlum 44-17	On contact with floor in room 201-A near column B-13	300 seconds
Metal ceilings	Background measurement	Ludlum 44-17	Probe waist high, pointed toward ceiling with sheet metal plate on end in room 201-A near column B-13	300 seconds

FINAL SURVEY REPORT
Survey Unit 776035

1) Introduction and Scope

A pre-demolition radiological survey (PDS) is performed prior to building demolition to define the radiological conditions of a facility. A PDS survey for survey unit 776035 has been completed in accordance with guidelines outlined in the "Radiological Pre-Demolition Survey Plan Building 776/777". Based on the results it is recommended that no further remediation is needed, and that the survey unit may be encapsulated in preparation for demolition. Isolation controls shall be put in place to prevent recontamination of the area. This report has been prepared in accordance with sections 3 and 8 of the "Radiological Pre-Demolition Survey Plan Building 776/777".

Survey unit 776035 is bounded by column lines 13-16 and D-G. This area is part of the original building and is located in the southeast corner of room 208 on the second floor of building 776.

2) PDS Methods and Techniques

The PDS survey results determine the Average Surface Contamination Value ($ASCV_u$) and source term for the survey unit. These parameters are used determine whether the building may be demolished within the limits outlined in the "Radiological Pre-Demolition Survey Plan Building 776/777".

To obtain a statistically powerful number of data points, a minimum of 30 survey points were selected per survey unit. A random start, systematic grid method was used to identify the survey point locations. Three types of surveys are performed at each survey point as follows:

a) Painted surfaces are evaluated for potential contamination under coatings using sodium iodide (NaI) gamma detectors attached to a single channel analyzer windowed for the 59 keV gamma-ray (Am^{241}).
b) Direct alpha surface contamination measurements are performed using a NE Electra survey instrument with attached DP-6 probe. This data may be compared to the NaI survey data to show the fraction of contamination that is directly on the surface verses imbedded in the material matrix.
c) Removable surface alpha contamination surveys were performed by swiping the survey point with a 47mm filter paper then counting the filter paper on a SAC-4 alpha counter. This data may be used to gauge the effectiveness of encapsulation following the PDS.

To conservatively determine the final Average Surface Contamination Value ($ASCV_u$) for the survey unit, the source term associated with inaccessible areas of the survey unit (as described in section 4 of this report) is added to the source term calculated by the PDS survey.

6

3) ALARA Post Remediation Surveys

In addition to the PDS used to determine the Average Surface Contamination Value ($ASCV_u$) and source term for the survey unit, surveys were taken to determine the effectiveness of remediation efforts. Remediation is performed to demonstrate a reasonable best effort is made to maintain releases to the environment and doses to the workers ALARA. Remediation may include decontamination, or removal of parts of the structure such as block wall removal.

a) Floors

The floors of survey unit 776035 consist of epoxy covered concrete. Measurements collected on the floor of 776035 show that the majority of the floor has activity below the MDA of the NaI instruments. Survey grids 35-16, 35-32, 35-33 and 35-35 had elevated activities during the in-process characterization survey and were shaved before being re-surveyed. Grids 35-49 through 35-54 were reclassified as part of unit 776034. Remediation of the elevated floor areas resulted in a decontamination factor (DF) of 1.44, or a source term reduction of 31%.

Table 1:
Floor Remediation Results

	Pre-Remediation (In-process)	Post-Remediation (Follow-up)
Maximum (dpm/100cm^2)	576,660	194,188
Minimum (dpm/100cm^2)	14,326	12,860
Average (dpm/100cm^2)	53,669	37,301
Average (μCi/m^2)	2.42	1.68
Source Term (μCi)	1010.52	702.34

b) Walls

Walls of survey unit 776035 were surveyed during the in process characterization using a 10 foot wide by 5 foot high grid system. Since data was collected in this manner during the in-process survey, data was collected this way for the follow-up survey report. Twenty-eight measurements were collected on the walls following the 10 foot by 5 foot grid pattern. Twelve of the survey points (35-113 through 35-124) are located on fiberglass wall sheeting so total alpha was determined using a NE Technologies Electra with DP-6 probe. Survey points 35-135 through 35-157 were reclassified as part of survey unit 776034. All wall survey points in survey unit 776035 were measured to be less than the MDA of the instrument used.

7

Table 2:
Wall Remediation Results

	Pre-Remediation (In-process)	Post-Remediation
Maximum (dpm/100cm^2)	21,394	21,394
Minimum (dpm/100cm^2)	21,301	21,301
Average (dpm/100cm^2)	21,348	21,348
Average (μCi/m^2)	0.96	0.96
Source Term (μCi)	99.05	99.05

c) **Ceilings**

No ceiling survey points were determined to require remediation during the in-process characterization of survey unit 776035, however, several survey points on the ceiling were not surveyed at that time due to being obstructed by equipment. During the follow-up survey data was collected for the remaining survey points. Due to the addition of the remaining survey points the minimum activity and therefore the average activity and source term was reduced by 21.5 uCi. Survey grids 35-103 through 35-108 were reclassified as part of 776034.

Table 3:
Ceiling Remediation Results

	Pre-Remediation (In-process)	Post-Remediation
Maximum (dpm/100cm^2)	47,091	47,091
Minimum (dpm/100cm^2)	14,621	5,514
Average (dpm/100cm^2)	26,452	25,310
Average (μCi/m^2)	1.19	1.14
Source Term (μCi)	498.06	476.56

4) **Inaccessible Areas**

a) **Floors**

One inaccessible area was identified on the floor of survey unit 776035 located in survey grid 35-16. The area is a pass through less than two feet in diameter to the ceiling of survey unit 776013 and will be addressed in that report.

b) **Walls**

No inaccessible areas were identified on the walls of survey unit 776035.

c) **Ceilings**

No inaccessible areas were identified on the ceiling of survey unit 776035.

8

5.) PDS Survey Results Summary

The values for the accessible areas and inaccessible areas were summed and divided by the total area for the survey unit to calculate the "Average Surface Contamination Value" ($ASCV_u$) and source term for the survey unit. The results are summarized in Table 4 below:

Table 4:
PDS Final Results

	Final Results
776035 Source Term Inaccessible Areas (μCi)	0
776035 Source Term Accessible Areas (μCi)	432.6
776035 Total Source Term (μCi)	432.6
Survey Unit Area (m^2)	1,016
$ASCV_u$ ($\mu Ci/m^2$)	0.43
$ASCV_u$ ($dpm/100cm^2$)	9,452

Table 6 Notes:

a) Inaccessible areas source term from Section 4 of this report.

b) Accessible area source term is the sum of source terms attributed to floors, walls and ceiling as determined by the final PDS report.

c) Total Source Term equals the sums of the source terms of Inaccessible Area + Accessible Area.
Total Source Term = (0 + 432.6) μCi = 432.6 μCi

d) Average Surface Contamination for the Survey Unit ($ASCV_u$) in $dpm/100cm^2$ equals:
$ASCV_u$ = (432.6 μCi)(22,200 $dpm/100cm^2$ / 1 $\mu Ci/m^2$) / (1,016 m^2)= 9,452 $dpm/100cm^2$

Survey Unit 776035 Summary

Total Surface Activity Measurements

30	30	
Number Required	Number Obtained	
MIN	4,097	dpm/100 cm^2
MAX	46,133	dpm/100 cm^2
Average	9,452	dpm/100 cm^2
STD DEV	11,572	dpm/100 cm^2

Total Surface Area	1016	m^2
Inaccessible Areas	0.0	µCi, Alpha
Accessible Surfaces	432.6	µCi, Alpha

Total Inventory	432.6	µCi, Alpha
$ASCV_u$	9,452	dpm/100cm^2
$ASCV_u$	0.43	µCi per m^2

BLDG. 776 Survey Unit 776035
Nal Results

Location #	E/W Column letter	N/S Column Number	Distance North	Distance East	Elevation	Gross Counts	dpm/100cm2 PRE REMEDIATION	dpm/100cm2 POST REMEDIATION
FLOORS								
35-1	F	13	17	4	0	4255	60,588	60,588
35-2	F	13	18	3	0	3923	34,996	34,996
35-3	F	14	17	3	0	3677	16,033	16,033
35-4	F	14	17	3	0	3644	14,928	14,928
35-5	F	15	13	7	0	3523	14,928	14,928
35-6	F	15	15	14	0	3780	23,973	23,973
35-7	F	16	15	6	0	3213	14,928	14,928
35-8	F	16	15	15	0	3213	14,928	14,928
35-9	F	16	8	12	0	3257	14,928	14,928
35-10	F	16	3	6	0	3166	14,928	14,928
35-11	F	15	6	12	0	3653	14,928	14,928
35-12	F	15	2	3	0	3580	14,928	14,928
35-13	F	14	8	12	0	3577	14,928	14,928
35-14	F	14	8	3	0	3725	19,733	19,733
35-15	F	13	5	16	0	3884	31,990	31,990
35-16	F	13	9	3	0	3566	576,660	194,188
35-17	E	13	14	2	0	16861	59,740	51,569
35-18	E	13	13	18	0	3555	27,750	27,750
35-19	E	14	15	2	0	3591	30,525	30,525
35-20	E	14	17	18	0	3504	23,819	23,819
35-21	E	15	18	3	0	3678	37,231	34,264
35-22	E	15	12	18	0	3454	19,965	19,965
35-23	E	16	15	2	0	704	N/A	14,407
35-24	E	16	16	13	0	2811	14,326	14,326
35-25	E	16	3	12	0	2866	14,326	14,326
35-26	E	16	3	8	0	3013	14,326	14,326
35-27	E	15	3	17	0	3510	24,281	24,281
35-28	E	15	4	6	0	942	N/A	14,407
35-29	E	14	7	12	0	3597	30,988	30,988
35-30	E	14	2	6	0	3707	39,467	34,456
35-31	E	13	3	12	0	4073	67,679	61,281
35-32	E	13	2	2	0	1309	239,652	12,860
35-33	D	13	18	2	0	5511	178,525	118,940
35-34	D	13	13	13	0	4365	90,188	79,473
35-35	D	14	18	9	0	2104	278,810	98,907
35-36	D	14	17	14	0	4321	86,796	50,561
35-37	D	15	11	4	0	3646	34,765	31,720
35-38	D	15	16	12	0	3400	15,802	15,802
35-39	D	16	18	5	0	2848	14,513	14,513
35-40	D	16	15	12	0	2863	14,513	14,513

11

BLDG. 776 Survey Unit 776035
Nal Results

Location #	E/W Column letter	N/S Column Number	Distance North	Distance East	Elevation	Gross Counts	dpm/100cm2 PRE REMEDIATION	dpm/100cm2 POST REMEDIATION
35-41	D	16	7	14	0	2882	14,513	14,513
35-42	D	16	7	7	0	2867	14,513	14,513
35-43	D	15	3	11	0	3941	51,029	51,029
35-44	D	15	0	4	0	4539	97,125	98,435
35-45	D	14	0	16	0	4214	72,073	72,073
35-46	D	14	2	4	0	4245	74,463	74,463
35-47	D	13	4	17	0	3820	41,702	41,702
35-48	D	13	0	4	0	4056	59,894	59,894
CEILING								
35-55	F.	13	13	9	14	126	26,420	36,027
35-56	F.	13	13	12	14	124	26,420	36,027
35-57	F.	14	12	5	12	131	14,621	14,150
35-58	F.	14	12	15	12	100	14,621	14,150
35-59	F.	15	13	5	12	103	14,621	14,150
35-60	F.	15	14	12	14	114	26,420	36,027
35-61	F	16	15	5	14	189	N/A	11,162
35-62	F	16	15	12	14	183	N/A	10,232
35-63	F	16	5	12	18	175	N/A	8,992
35-64	F	16	5	5	14	188	N/A	11,007
35-65	F.	15	8	12	14	145	26,420	36,027
35-66	F.	15	4	8	12	122	14,621	14,150
35-67	F.	14	8	15	12	125	14,621	14,150
35-68	F.	14	2	9	12	140	14,621	14,150
35-69	F.	13	5	12	14	126	26,420	36,027
35-70	F.	13	4	9	14	130	26,420	36,027
35-71	E	13	14	8	14	118	26,420	36,027
35-72	E	13	14	13	14	128	26,420	36,027
35-73	E	14	16	5	12	147	14,621	14,150
35-74	E	14	13	17	14	134	20,691	20,691
35-75	E	15	17	5	14	103	20,691	20,691
35-76	E	15	16	11	14	130	20,691	20,691
35-77	E	16	15	5	17	170	94	94
35-78	E	16	16	15	21	185	31,955	31,955
35-79	E	16	9	14	21	212	47,091	47,091
35-80	E	16	5	5	14	143	94	5,514
35-81	E	15	5	13	14	133	36,027	36,027
35-82	E	15	6	4	14	157	36,027	36,027
35-83	E	14	1	15	14	130	20,855	20,855
35-84	E	14	6	8	14	129	20,855	20,855
35-85	E	13	2	14	14	127	36,027	36,027
35-86	E	13	5	5	14	104	20,691	20,691

BLDG. 776 Survey Unit 776035
NaI Results

Location #	E/W Column letter	N/S Column Number	Distance North	Distance East	Elevation	Gross Counts	dpm/100cm2 PRE REMEDIATION	dpm/100cm2 POST REMEDIATION
35-87	D	13	15	5	14	106	20,691	20,691
35-88	D	13	14	12	14	99	20,691	20,691
35-89	D	14	12	3	14	100	20,691	20,691
35-90	D	14	15	15	14	112	20,855	20,855
35-91	D	15	16	5	14	136	20,855	20,855
35-92	D	15	15	13	14	135	36,027	36,027
35-93	D	16	15	5	18	133	94	5,514
35-94	D	16	16	15	21	189	34,197	34,197
35-95	D	16	4	15	21	204	42,606	42,606
35-96	D	16	5	5	18	133	94	5,514
35-97	D	15	5	17	14	104	36,027	36,027
35-98	D	15	5	4	14	97	36,027	36,027
35-99	D	14	15	6	14	128	36,027	36,027
35-100	D	14	5	6	14	134	36,027	36,027
35-101	D	13	14	5	14	93	36,027	36,027
35-102	D	13	5	7	14	119	36,027	36,027
WALLS								
35-109	F	13	5	0	5	296	21,394	21,394
35-109A	E	13	7	0	5	338	21,394	21,394
35-110	F	13	6	0	12	282	21,301	21,301
35-110B	E	13	6	0	12	281	21,301	21,301
35-111	F	13	13	0	5	313	21,394	21,394
35-112	F	13	16	0	10	320	21,301	21,301
35-113	Transite Wall	Replaced	Alpha survey only				94	94
35-114	Transite Wall	Replaced	Alpha survey only				94	94
35-115	Transite Wall	Replaced	Alpha survey only				94	94
35-116	Transite Wall	Replaced	Alpha survey only				94	94
35-117	Transite Wall	Replaced	Alpha survey only				94	94
35-118	Transite Wall	Replaced	Alpha survey only				94	94
35-119	Transite Wall	Replaced	Alpha survey only				94	94
35-120	Transite Wall	Replaced	Alpha survey only				94	94
35-121	Transite Wall	Replaced	Alpha survey only				94	94
35-122	Transite Wall	Replaced	Alpha survey only				94	94
35-123	Transite Wall	Replaced	Alpha survey only				94	94
35-124	Transite Wall	Replaced	Alpha survey only				94	94
35-125	D	15	0	3	5	255	21,394	21,394
35-126	D	15	0	5	7	338	21,301	21,301
35-127	D	14	0	15	5	313	21,394	21,394
35-128	D	14	0	15	12	266	21,301	21,301
35-129	D	14	0	5	5	335	21,394	21,394
35-130	D	14	0	5	12	306	21,301	21,301

BLDG. 776 Survey Unit 776035
NaI Results

Location #	E/W Column letter	N/S Column Number	Distance North	Distance East	Elevation	Gross Counts	dpm/100cm2 PRE REMEDIATION	dpm/100cm2 POST REMEDIATION
35-131	D	13	0	15	5	315	21,394	21,394
35-132	D	13	0	13	12	295	21,301	21,301
35-133	D	13	0	5	5	319	21,394	21,394
35-134	D	13	0	4	12	268	21,301	21,301

Removable Activity

Survey Area:		2nd Floor	Survey Unit:		776035
Dates Counted:	10/3/04				
A priori MDA:	16				
Efficiency (c/d)	0.333				
Smear Location Number	Smear Results				
	RCT ID #	Serial Number	Gross (cpm)	Bkg.	(dpm/100 cm^2)
1	1	951	1	0.1	3
2	1	756	2	0.1	6
3	1	951	1	0.1	3
4	1	756	0	0.1	0
5	2	1270	0	0.0	0
6	2	756	0	0.1	0
7	2	951	2	0.1	6
8	2	756	2	0.1	6
9	2	951	0	0.1	0
10	2	756	0	0.1	0
11	2	951	3	0.1	9
12	2	756	9	0.1	27
13	2	951	0	0.1	0
14	2	1270	0	0.0	0
15	2	1270	1	0.0	3
16	1	756	0	0.1	0
17	2	951	1	0.1	3
18	1	756	0	0.1	0
19	2	951	0	0.1	0
20	1	1270	0	0.0	0
21	2	1270	0	0.0	0
22	1	1270	0	0.0	0
23	2	951	2	0.1	6
24	1	756	2	0.1	6
25	2	951	0	0.1	0
26	1	756	0	0.1	0
27	2	951	0	0.1	0
28	1	951	1	0.1	3
29	2	951	4	0.1	12
30	1	756	0	0.1	0
				MIN	-0.3
				MAX	**26.7**
				MEAN	**2.9**
				SD	5.5

15

Total Surface Activity

Survey Area:		2nd Floor	Survey Unit:		776035			
Meter Model:		NE Electra w/ DP6 Probe					Dates Counted:	10/3/04
Instrument #:		1264	4673	2093	n/a	n/a	A priori MDA:	94
Cal. Due Date:		2/24/05	11/3/04	1/31/05	n/a	n/a	Avg. Local Bkgd	3.6
Efficiency (c/d):		0.226	0.217	0.218	n/a	n/a	Avg. Efficiency	0.222
Sample Location #	RCT ID #	Inst. #	Instrument (cpm)		Local Bkgd (cpm)		(dpm/100 cm^2)	
1	2	4673	15		3.0		54.1	
2	2	4673	12		2.5		42.8	
3	2	4673	9		2.0		29.3	
4	2	4673	10		1.0		40.5	
5	1	2093	10		5.0		22.5	
6	1	1264	12		3.0		40.5	
7	1	1264	12		4.0		36.0	
8	1	1264	17		1.0		72.1	
9	1	1264	13		2.0		49.5	
10	1	1264	18		2.0		72.1	
11	1	1264	32		4.0		126.1	
12	1	1264	16		7.0		40.5	
13	1	1264	5		2.0		13.5	
14	1	2093	6		6.0		0.0	
15	1	2093	7		3.0		18.0	
16	1	1264	10		4.0		27.5	
17	1	1264	16		5.0		49.5	
18	1	1264	21		3.0		81.1	
19	1	1264	13		8.0		22.5	
20	1	2093	8		6.0		9.0	
21	1	2093	6		6.0		0.0	
22	1	2093	9		5.0		18.0	
23	2	4673	25		5.0		90.1	
24	2	4673	17		3.0		63.1	
25	2	4673	13		3.0		45.0	
26	2	4673	8		2.0		27.0	
27	2	4673	10		1.0		38.3	
28	2	4673	10		2.0		33.8	
29	2	4673	8		2.0		27.0	
30	2	4673	22		4.0		81.1	
						MIN	0.0	
						MAX	126.1	
						MEAN	42.4	
						SD	28.3	

16

Sample Location Number	NaI Activity Measurements				
	Measurement Used	Comment	Surface	Coating	(dpm/100 cm^2)
1	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
2	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
3	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
4	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
5	Sodium Iodide	N/A	wall	Thin/No Paint	46,133.0
6	Sodium Iodide	N/A	wall	Thin/No Paint	4,309.0
7	Sodium Iodide	N/A	wall	Thin/No Paint	16,249.0
8	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
9	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
10	Sodium Iodide	N/A	Floor	Thin/No Paint	14,525.0
11	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
12	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
13	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
14	Sodium Iodide	N/A	wall	Thin/No Paint	42,242.0
15	Sodium Iodide	N/A	wall	Thin/No Paint	36,795.0
16	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
17	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
18	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
19	Sodium Iodide	N/A	Floor	Thin/No Paint	4,309.0
20	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,097.0
21	Sodium Iodide	N/A	Ceiling	Thin/No Paint	5,669.0
22	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,097.0
23	Sodium Iodide	N/A	Ceiling	Thin/No Paint	14,445.0
24	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
25	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
26	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
27	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
28	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
29	Sodium Iodide	N/A	Ceiling	Thin/No Paint	4,287.0
30	Sodium Iodide	N/A	Ceiling	Thin/No Paint	13,334.0
				MIN	**4,097**
				MAX	**46,133**
				AVERAGE	**9,452**
				SD	**11,572**

Data and Sodium Iodide Instrument Information

Survey Area:	2nd Floor	Survey Unit:	776035	Survey Date(s):	10/03/04

Instrument Specifications

Instrument #	1	2
Meter Model:	Ludlum 2350-1	Ludlum 2350-1
Meter Serial #:	203457	192614
Detector Model:	Bicron G-5	Ludlum 44-17
Detector #:	B940T	209090
Detector Size (cm^2):	125	17.8
Calibration Due Date:	12/3/04	10/20/04
Count Time (min)	5	5
Contact Efficiency	6.05%	8.24%

Ratio Used

Pu to Am - 241	8.1

Comments

In cases where the critical level is greater than the calculated dpm/100cm2, the critical level will be used for statistical analysis.

Count Times for backgrounds and samples are equal.

Attenuation Factors: Based on observation of Walls and Ceilings. Epoxy on Floor determined by chip sampling.

Background (Gross)

Instrument #	1	2
Gamma (Ceilings)	N/A	275
Gamma (Floors)	7387	N/A
Gamma (Block Walls)	N/A	711
Gamma (Solid Walls)	N/A	711

Background (cpm)

Instrument #	1	2
Gamma (Ceilings)	N/A	55
Gamma (Floors)	1477.4	N/A
Gamma (Block Walls)	N/A	142.2
Gamma (Metal Walls)	N/A	142.2

Efficiencies (cpm/dpm)

Instrument #	1	2
Thin/No Paint	0.060	0.082
Epoxy	0.049	0.066
Other	0.057	0.078

Coatings	Thickness (inches)
Thin/No Paint	0.007
Epoxy	0.250
Other	0.06

18

Total Activity Estimates Using Sodium Iodide Instruments

Survey Area:	2nd Floor	Survey Unit:	776035	Survey Date(s):	10/03/04

Sample Location #	RCT ID #	Instrument #	Gross Counts	Critical Level (dpm/cm2)	Total Alpha (dpm/cm2)
1	2	2	295	4,287	4,287
2	2	2	270	4,287	4,287
3	2	2	246	4,287	4,287
4	2	2	198	4,287	4,287
N/A	N/A	N/A	N/A	N/A	N/A
6	1	1	4112	4,309	4,309
7	1	1	8,141	4,309	16,249
8	1	1	5,077	4,309	4,309
9	1	1	7,497	4,309	4,309
10	1	1	8,061	4,309	14,525
11	1	1	5402	4,309	4,309
12	1	1	6478	4,309	4,309
13	1	1	4,591	4,309	4,309
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
16	1	1	4,287	4,309	4,309
17	1	1	7240	4,309	4,309
18	1	1	4713	4,309	4,309
19	1	1	6895	4,309	4,309
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
23	2	2	405	4,287	14,445
24	2	2	246	4,287	4,287
25	2	2	250	4,287	4,287
26	2	2	153	4,287	4,287
27	2	2	285	4,287	4,287
28	2	2	235	4,287	4,287
29	2	2	310	4,287	4,287
30	2	2	395	4,287	13,334

Estimate Data and Sodium Iodide Instrument Information

Survey Area:	2nd Floor	Survey Unit:	776035	Survey Date(s):	10/13/04

Instrument Specifications

Instrument #	1	2
Meter Model:	Ludlum 2350-1	N/A
Meter Serial #:	192614	N/A
Detector Model:	Ludlum 44-17	N/A
Detector #:	209090	N/A
Detector Size (cm^2):	17.8	N/A
Calibration Due Date:	10/20/04	N/A
Count Time (min)	5	N/A
Contact Efficiency	8.24%	N/A

Ratio Used

Pu to Am - 241	8.1

Comments

In cases where the critical level is greater than the calculated dpm/100cm2, the critical level will be used for statistical analysis.

Count Times for backgrounds and samples are equal.

Attenuation Factors: Based on observation of Walls and Ceilings. Contamination assumed to be under thin layer of fixative on all surfaces

Background (Gross)

Instrument #	1	2
Gamma (Ceilings)	251	N/A
Gamma (Floors)	N/A	N/A
Gamma (Walls)	658	N/A

Background (cpm)

Instrument #	1	2
Gamma (Ceilings)	50.2	N/A
Gamma (Floors)	N/A	N/A
Gamma (Walls)	131.6	N/A

Efficiencies (cpm/dpm)

Instrument #	1	2
Thin/No Paint	0.082	N/A
Epoxy	0.078	N/A
Other	N/A	N/A

Coatings	Thickness (inches)
Thin/No Paint	0.008
Epoxy	0.060
Other	N/A

20

Total Activity Using Sodium Iodide Instruments (Cont'd)

Survey Area:	2nd Floor	Survey Unit:	776035	Survey Date(s):	10/13/04

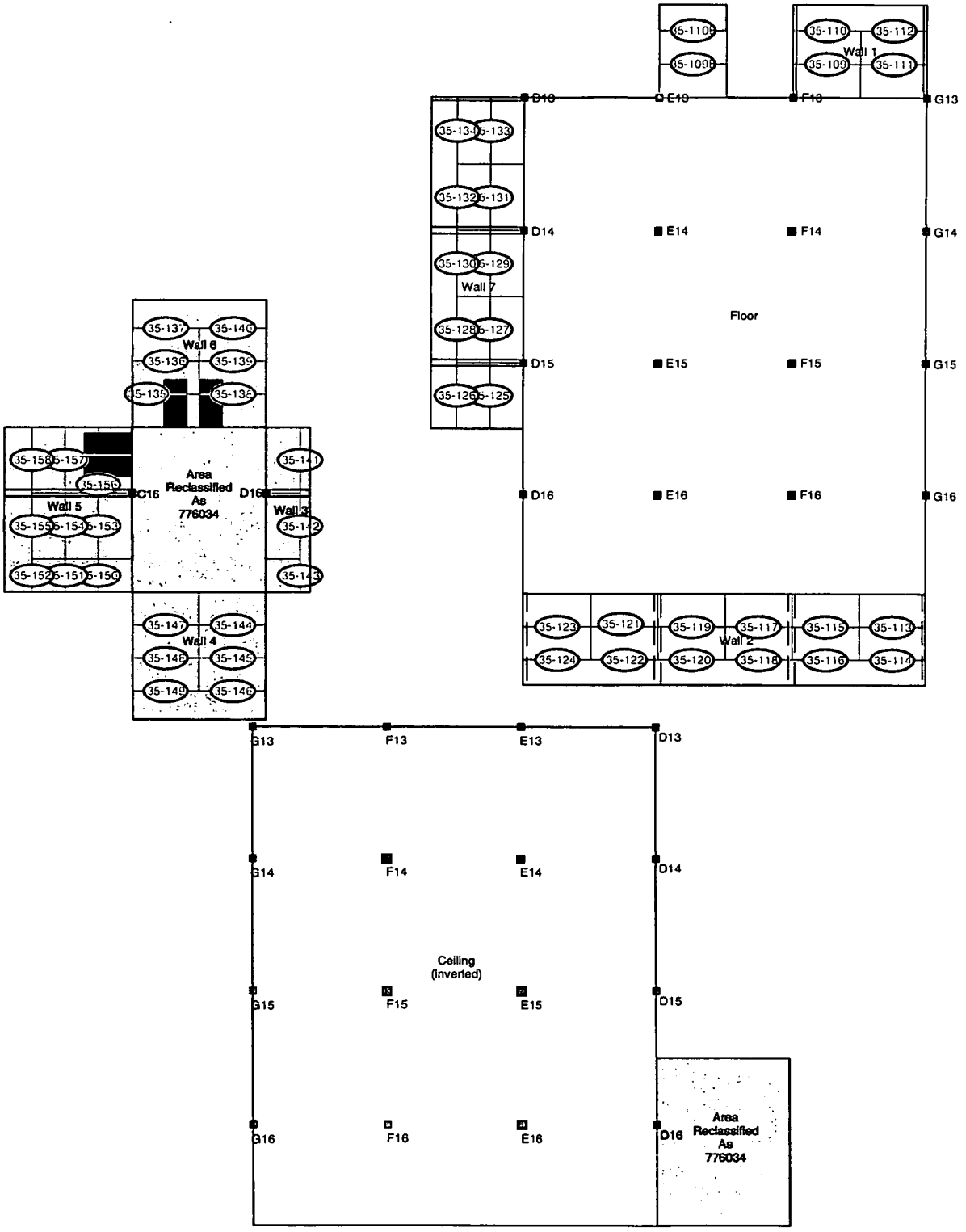
Sample Location #	RCT ID #	Instrument #	Gross Counts	Critical Level (dpm/100cm2)	Total Alpha (dpm/100cm2)
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
5	1	1	1,073	6,634	46,133
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
14	1	1	1038	N/A	42,242
15	1	1	989	N/A	36,795
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
20	1	1	284	4,097	4,097
21	1	1	302	4,097	5,669
22	1	1	273	4,097	4,097
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A

RADIOLOGICAL CLOSEOUT SURVEY FOR THE 776 CLUSTER

Survey Area: Second Floor **Survey Unit: 776035** **Classification: NA**
Building: 776
Survey Unit Description: Second floor

Total Floor Area: 418 sq. m **Total Area: 1016 sq. m** **Grid Size: 6 x 6**

SURVEY UNIT 776035 - MAP 1 OF 1



0 FEET 30

0 METERS 10

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SURVEY MAP LEGEND
- Smear & TSC Location
- Smear, TSC & Sample Location
- Open/Inaccessible Area
- Area in Another Location

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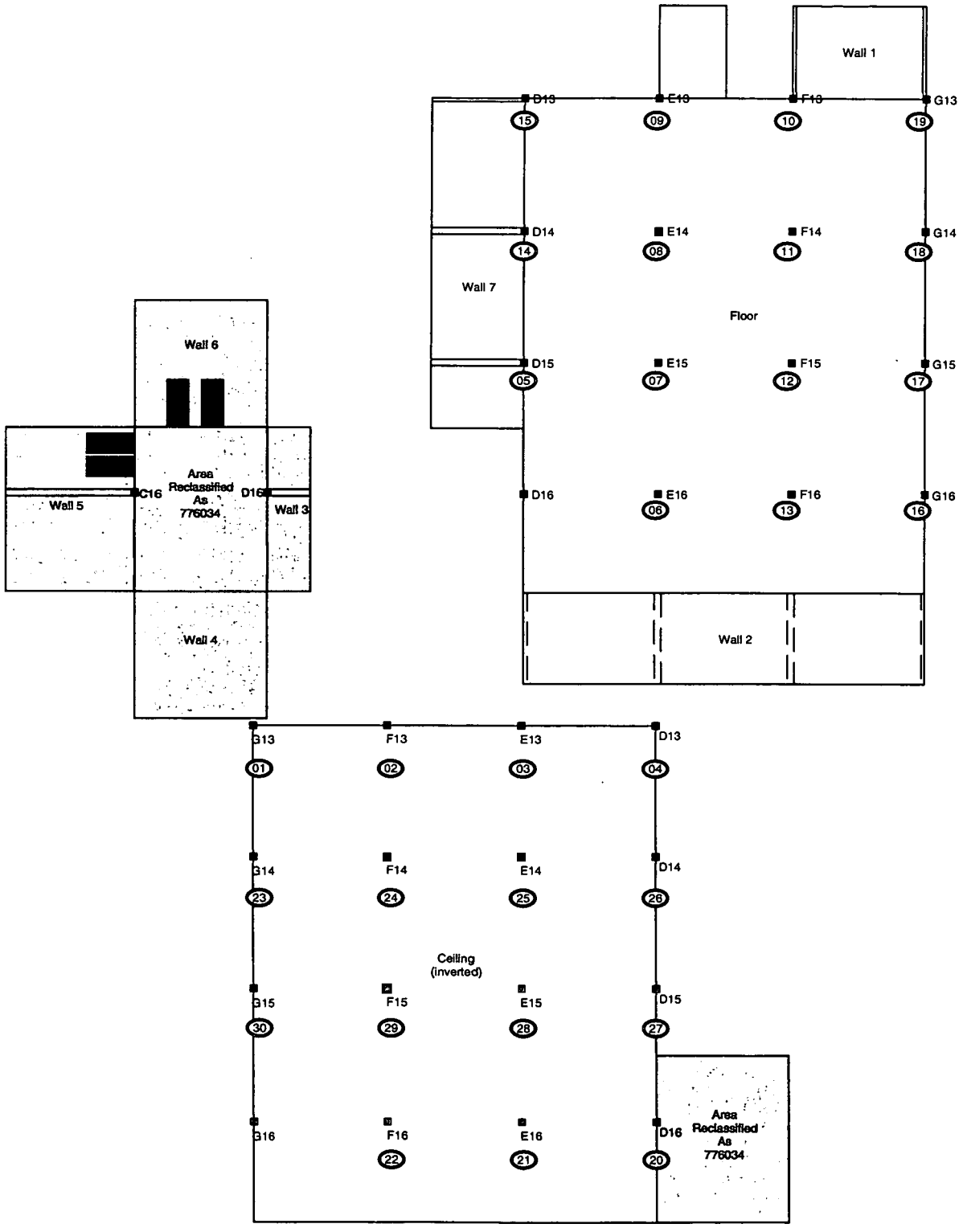
RADIOLOGICAL CLOSEOUT SURVEY FOR THE 776 CLUSTER

Survey Area: Second Floor **Survey Unit: 776035** **Classification: NA**
Building: 776
Survey Unit Description: Second floor

Total Floor Area: 418 sq. m **Total Area: 1016 sq. m** **Grid Size: 6 x 6**

SURVEY UNIT 776035 - MAP 1 OF 1



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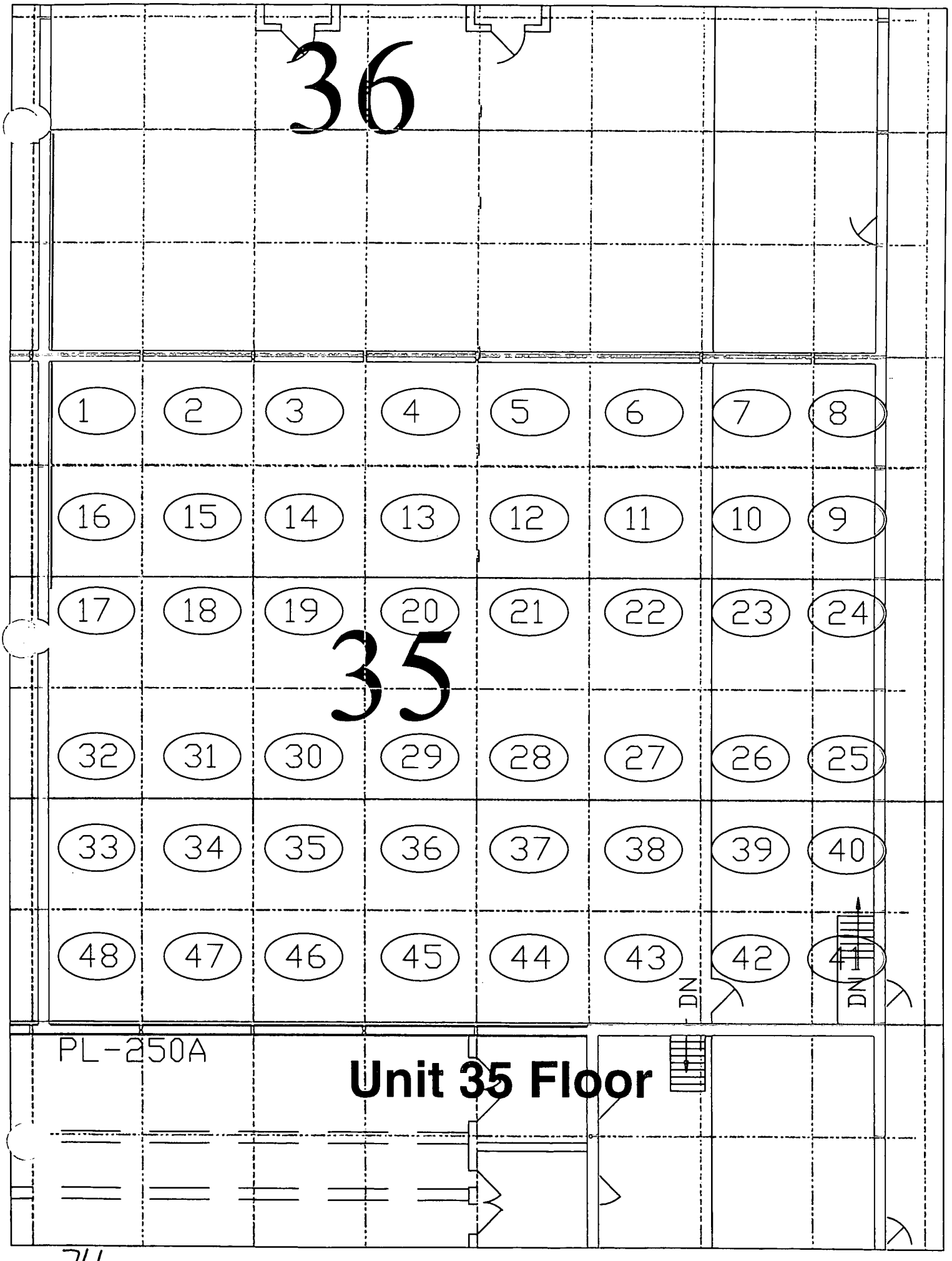
SURVEY MAP LEGEND
- Smear & TSC Location
- Smear, TSC & Sample Location
- Open/Inaccessible Area
- Area in Another Location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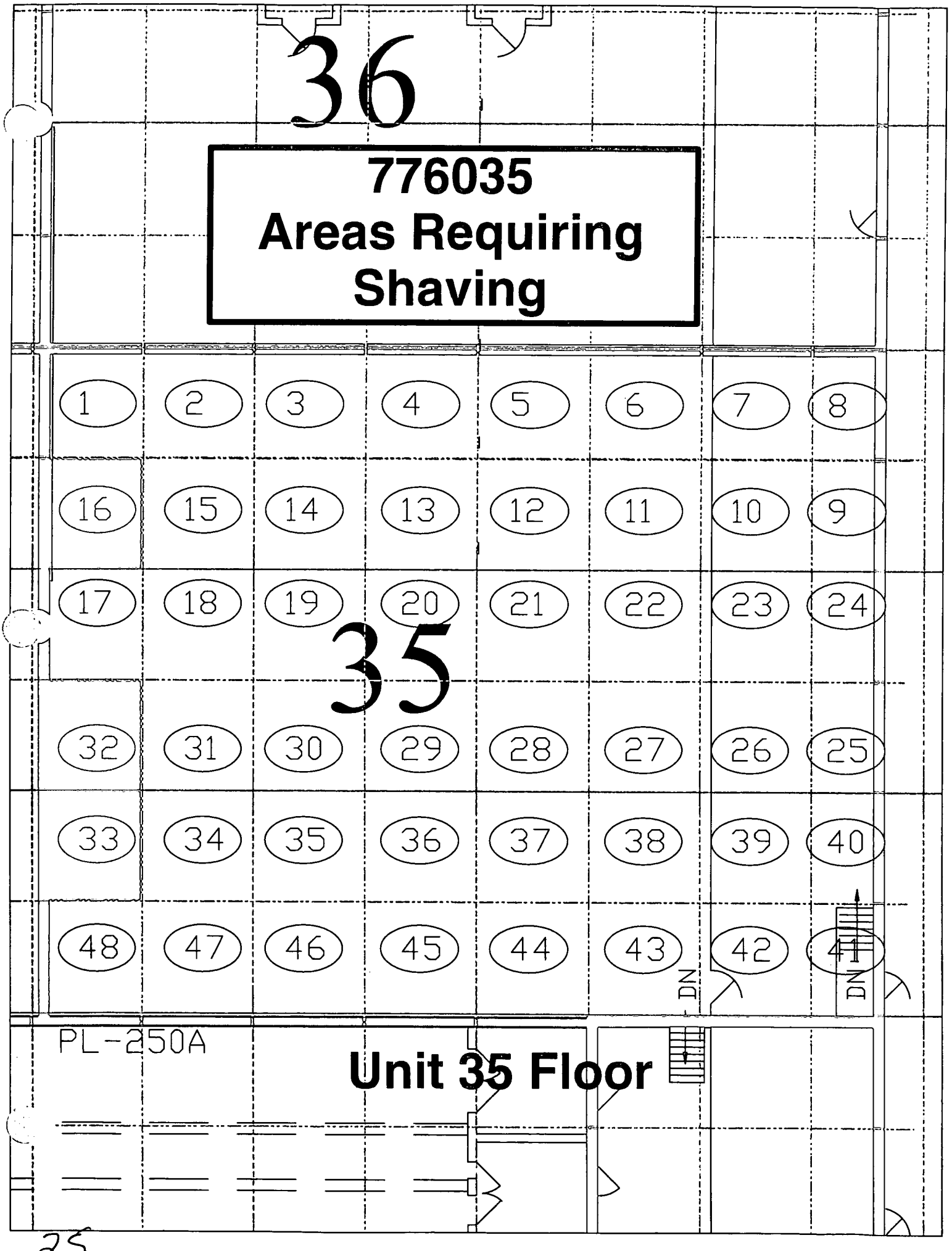
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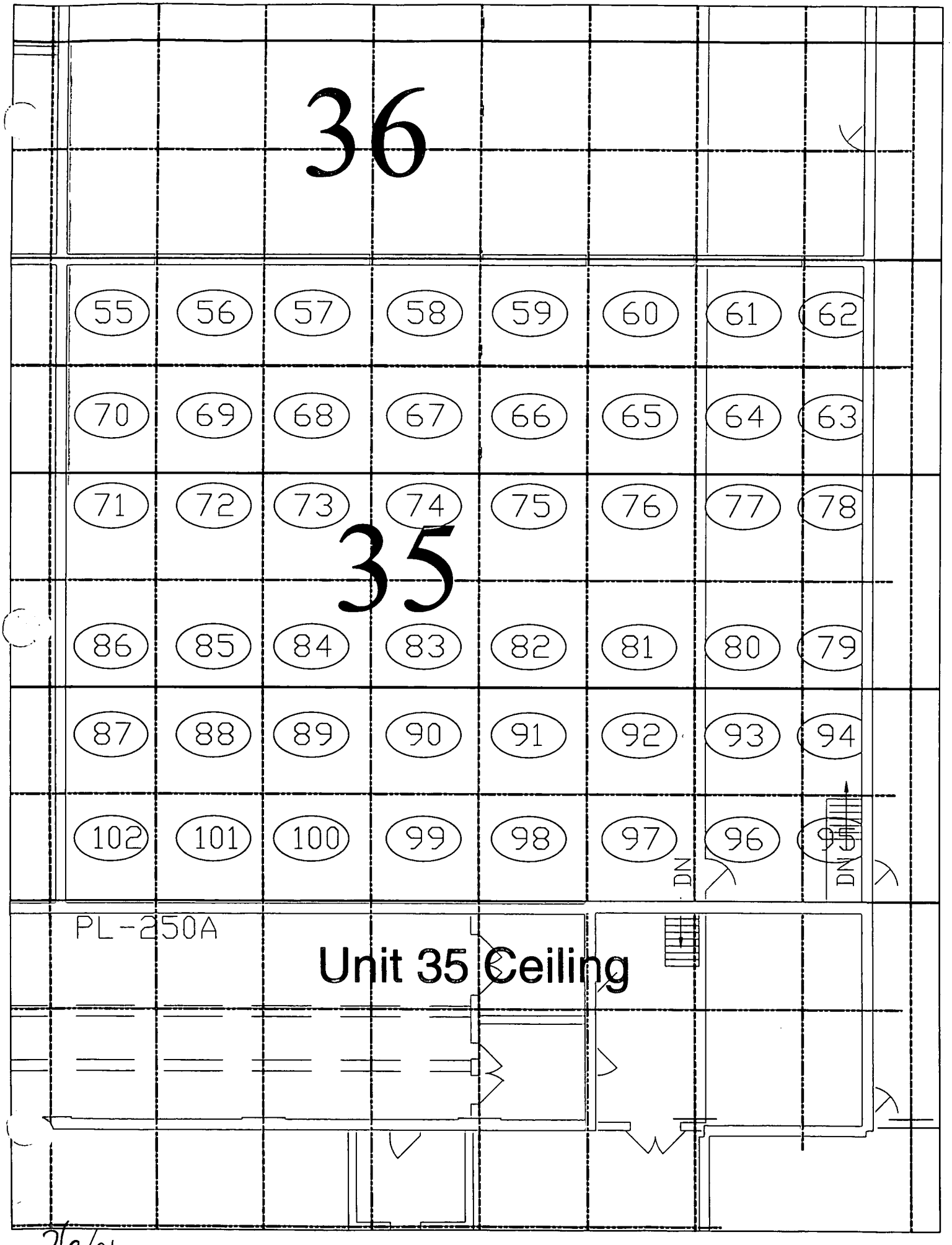
Unit 35 Floor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PL-250A
Unit 35 Ceiling